Reviewer's report

Title: Notch signaling activation mediates the induction and maintenance of mechanical allodynia in a rat model of neuropathic pain

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Reviewer: Dae-Hyun Roh

Reviewer's report:

In this study, the authors showed that single or repetitive administration of DAPT, an inhibitor of notch signaling pathway, prevented or reversed the decrease of mechanical PWT after spared nerve injury. Especially, both early and late administration of DAPT dose-dependently produced the anti-allodynic effect. In addition, single administration of Jagged-1 peptide, a ligand of notch signaling pathway, decreased the mechanical PWT of normal rats. Overall experimental design is reasonable and results showing the powerful effect of DAPT are interesting. However, there are some important concerns that should be addressed for the possible publication in BMC Anesthesiology.

Comments:

1. Although the authors titled the “notch signaling activation” and addressed this extensively, there is no data or literature related to this notch signaling activation after SNI in rats. The authors need to present obvious evidences showing whether notch signaling pathway in the lumbar spinal cord was activated after SNI surgery using several experiments such as western blot assay or immunohistochemistry.

2. In figure 1, the injection of DAPT 30 min before (A) or after (B) SNI surgery produced different effect in development of mechanical allodynia at 21 or 28 days after surgery. In addition, the effect of repetitive daily DAPT injection for 3 days (C) was similar to the effect of single injection of DAPT 30 min before SNI (A). The purpose of these experiments or the significance of these findings should be discussed in detail.

3. Address the precise time point when the experiments in Figure 2 and Figure 3B were performed after SNI surgery.

4. The authors need to show when the decreased PWT after the injection of Jagged-1 peptide was restored.

5. In abstract, line 20, the word “increased” should be corrected to “decreased”.

Level of interest: An article of importance in its field

Quality of written English: Acceptable
Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests.